

Hazardous Waste from DPFs and DOCs (Ash Handling Guidelines)

Individuals who own, operate, or maintain diesel engines equipped with diesel particulate filters (DPFs) or diesel oxidation catalysts (DOCs) may need to manage hazardous waste generated by these devices. Information is provided in this chapter on the generation and composition of ash, hazardous waste determination requirements, an evaluation of current cleaning techniques for DPFs, and provides directions on the appropriate disposal of ash from DPFs. The guidance also addresses the proper disposal of DPFs and DOCs once they are spent.

ASH GENERATION BY A DPF

1. How is ash generated?

A diesel particulate filter physically traps and collects diesel soot from engine exhaust. While the trapped soot is burned off through filter regeneration, metal oxide “ash” particles are not burned. Over time, the unburned ash will plug the filter unless the filter is periodically cleaned.

2. Why is ARB concerned about ash management?

We believe that the ash in a DPF may be properly classified as hazardous waste in California because in all of the tests we have seen, high levels of zinc, a hazardous substance, have been found. California laws, enforced by the Department of Toxic Substances Control (DTSC), require that you properly manage a hazardous waste. It is illegal to throw hazardous waste away in ordinary trash, or to dispose of hazardous waste by burying, burning, blowing it into the air, or placing it into water or down the sewer.

3. How do I clean the DPF to remove ash?

Manufacturers have recommended a variety of filter cleaning techniques to remove the ash from DPFs. ARB cautions you, however, to only follow recommended techniques that are developed under the assumption that the ash is a hazardous waste. Because California laws are more stringent than laws in other states and foreign countries, some cleaning methods assume that you can throw away the ash, blow the ash into the air, or dump it into the sewer. None of the methods are legal in California, if the ash is a hazardous waste. You should contact your DPF supplier for instructions on how to properly clean the DPF.

To have the least impact on the environment, and because the ash is likely to be a hazardous waste, the ARB recommends that a filter be cleaned in an enclosure (i.e., similar to a sandblasting glove box) that exhausts through a high efficiency particulate air (HEPA) filter. The HEPA filter should also be disposed of in accordance with any hazardous waste regulations.

4. ARB does not recommend the following cleaning methods, without modifications, if the ash is a hazardous waste:

Compressed Air: One cleaning method entails blowing compressed air through the filter in the direction opposite of the typical flow. If uncontrolled, however, this practice would simply blow the ash into the air/or work environment, potentially exposing workers to unsafe levels of zinc and other metal oxides. In addition, this would be an illegal disposal to the air of a hazardous waste. An acceptable modification would be to blow the compressed air into a chamber with a HEPA filter that collects all of the particulates, for eventual disposal as a hazardous waste.

High Pressure Water and Detergent: High-pressure water with or without detergent may be recommended to clean the filter. This method results in wastewater containing metal oxides, possibly being hazardous waste, that could not be discharged to the sanitary sewer or storm drains. Pouring the residue on the ground would also be prohibited. Collecting the waste water and disposing of it through a reputable hazardous waste management company would be acceptable.

Reversing the Filter: Some DPF manufacturers recommend reversing the filter periodically to more evenly distribute the collected particulate on the filter substrate. This practice will simply blow the ash into the air and is not recommended by the ARB unless the filter has been previously cleaned using an approved method.

5. How much ash will be generated by a filter?

The ARB has heard that the amount of ash collected from a DPF ranges from a couple of teaspoons to one cup.

6. How can I find out if the ash is a hazardous waste?

As a potential generator, you have two options. You can assume the ash is hazardous waste, based on your knowledge that other tests have found it to be so, or you can have your waste tested by a state-authorized testing facility. You can get a list of these facilities from the Department of Toxic Substances Control.

7. What do I do if the ash is a hazardous waste?

You should contact a reputable hazardous waste management company to manage your hazardous waste.

DISPOSING OF A SPENT DPF OR DOC

The ash inside of a spent DPF, and the catalyst material on the substrate of a DPF or DOC may make the spent DPF or DOC hazardous waste, thus proper management is critical. A spent DOC may be recyclable because of the value of the precious metals that coat the filter. Once the ash and precious metals are removed or recovered, the DPF or DOC may be managed as scrap metal. The DTSC regulates used automotive catalytic converters as scrap metal as long as the catalyst material is left in the converter shell during collection and transportation of the converters for recycling. You should contact a reputable hazardous materials management company for more information.

FINDING OUT MORE ABOUT HAZARDOUS WASTE

In California, the Department of Toxic Substances Control has authority over the regulation of hazardous waste. The State's hazardous waste laws are found in the Health and Safety Code, Division 20, and in the California Code of Regulations, Title 22, Division 4.5. In California, all hazardous waste must be disposed of at a facility that is permitted by the DTSC. You can get more information from DTSC by contacting the DTSC Public and Business Liaison at 1-800-728-6942, or <http://www.dtsc.ca.gov/ToxicQuestions/index.html> for a listing of the DTSC's offices statewide.

In addition, you should contact the manufacturer of your DPF or DOC for recommended cleaning and disposal guidance.